

DEPLETION IMPLANT FOR POWER MOSFET

ABSTRACT OF THE INVENTION

A vertical MOSFET has a substrate of a first conductivity type. A channel region of a second conductivity type is diffused into the substrate. A gate is disposed at least partially over the channel region. A source region of a second conductivity type is disposed proximate to the gate and adjacent to the channel region. The channel region includes a depletion implant area proximate to the gate. The depletion implant species is of the second conductivity type to reduce the concentration of the first conductivity type in the channel region without increasing the conductivity in the drain/drift region.